

1     What is claimed is:

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3             1. A support arm assembly for stabilizing an outward, distal portion of a thin, rigid panel  
4 attached at an inward, mounted edge opposite the outward, distal portion to a fixed mounting surface,  
5 comprising:

6                 a support bar having externally threaded first and second ends of respective first and second  
7 arms joined at an elbow angle nearer the first end of the first arm that is substantially equal to a  
8 predetermined panel angle between the thin panel and the fixed, mounting surface;

9                 a first mounting assembly installed on the first end of the support bar for attaching the first  
10 end of the support bar to the thin panel at a first location thereon; and

11                a second mounting assembly installed on the second end of the support bar for attaching the  
12 second end of the support bar to the fixed, mounting surface at a second location thereon;

13                wherein the externally threaded first and second ends of the respective first and second arms  
14 of the support bar enable adjustment of the first and second mounting assemblies respectively along  
15 a longitudinal axis of each first and second arm of the support bar to stabilize the outward, distal  
16 portion of the thin panel at the predetermined panel angle.

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18             2. The support arm assembly of Claim 1, comprising a support bar constructed of solid or  
19 tubular material formed into a single piece support bar.

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21             3. The support arm assembly of Claim 1, comprising a support bar constructed of solid or  
22 tubular material and formed by two or more pieces joined together at the elbow angle.

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24             4. The support arm assembly of Claim 1, wherein the elbow angle of the support bar  
25 comprises an adjustable angle.

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27             5. The support arm assembly of Claim 1, wherein the elbow angle of the support bar includes  
28 a knuckle joint having a set screw pivot at the location of the angle to enable adjustment thereof.

1           6. The support arm assembly of Claim 1, wherein the support bar further comprises a length-  
2 adjustable segment in the second arm of the support bar to permit adjustment of the length thereof.

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4           7. The support arm assembly of Claim 1, wherein the first mounting assembly comprises:  
5 a first mounting plate;  
6 a first cover for concealing the first mounting plate ; and  
7 an outside cap for securing the first end of the support bar to the thin panel.

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9           8. The support arm assembly of Claim 7, wherein the first mounting plate comprises:  
10 a circular disk, having a first diameter, first and second sides and a center, and a round hole  
11 formed through the center of the circular disk for receiving the first arm of the support bar, flat on  
12 the first side and formed with a raised, hexagonal nut portion axially aligned with the center of the  
13 circular disk on the second side;

14           wherein a plurality of external screw threads are disposed around a perimeter of the circular  
15 disk and a plurality of internal screw threads matching the pitch and diameters of the external threads  
16 on the first end of the support bar are disposed within the bore through the circular disk

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18           9. The support arm assembly of Claim 7, wherein the first cover comprises:  
19 a top-hat-shaped cover having a crown portion and a brim portion and formed about a central  
20 axis;

21           wherein a plurality of internal screw threads, of pitch and diameters to match the threads  
22 around the perimeter of the first mounting plate, are formed inside the crown portion of the first  
23 cover, and a hole for receiving the first arm of the support bar there through is formed in the crown  
24 portion centered on the central axis of the first cover.

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26           10. The support arm assembly of Claim 7, wherein the outside cap comprises:  
27 a machine screw having a threaded shank and a disk-shaped head having a diameter  
28 approximately equal to the first diameter of the first mounting plate;

1 wherein screw threads on the threaded shank match a plurality of internal screw threads within  
2 a hole formed in the first end of the support bar along the longitudinal axis of the first arm of the  
3 support bar.  
4

5 11. The support arm assembly of Claim 1, wherein the second mounting assembly comprises:  
6 a second mounting plate, a plurality of mounting screws for securing the second mounting  
7 plate to the fixed mounting surface and a second cover for concealing the second mounting plate.  
8

9 12. The support arm assembly of Claim 11, wherein the second mounting plate comprises:  
10 a cylindrical body portion having an internally threaded axial bore there through and a circular  
11 flange portion disposed about and unified with a first end of the body portion;  
12 wherein a plurality of external screw threads are disposed around a perimeter of the circular  
13 flange portion; and  
14 wherein a plurality of mounting holes are uniformly disposed through the flange portion  
15 around and parallel to the axial bore.  
16

17 13. The support arm assembly of Claim 11, wherein the second cover comprises:  
18 a top-hat-shaped cover having a crown portion and a brim portion and formed about a central  
19 axis;  
20 wherein a plurality of internal screw threads, of pitch and diameters to match the threads  
21 around the perimeter of the second mounting plate, are formed inside the crown portion of the first  
22 cover, and a hole for receiving the second arm of the support bar there through is formed in the  
23 crown portion centered on the central axis of the second cover.  
24

25 14. The support arm assembly of Claim 1, wherein the predetermined angle is substantially  
26 a right angle.  
27

28 15. The support arm assembly of Claim 1, wherein the predetermined angle is other than  
29 substantially a right angle.

1           16. In an installation of a thin panel, attached along a first mounted edge portion of the thin  
2 panel at a predetermined panel angle to a fixed mounting surface, a method for stabilizing an outward,  
3 distal portion of the thin panel at a first location defined in the outward, distal portion of the thin  
4 panel, from a second location defined on the fixed, mounting surface, comprising the steps of:

5           providing a support arm assembly having a support bar of predetermined length, the support  
6 bar having externally threaded first and second ends of respective first and second arms, and having  
7 first and second mounting assemblies associated respectively with the externally threaded first and  
8 second ends of the support bar;

9           attaching the thin panel to the fixed vertical surface along the first mounted edge;

10          attaching the first end of the support bar to the thin panel at the first location using the first  
11 mounting assembly; and

12          attaching the second end of the support bar to the fixed, mounting surface at the second  
13 location using the second mounting assembly;

14          wherein the externally threaded first and second ends of the support bar permit adjustments  
15 of the first and second mounting assemblies along a longitudinal axis of each first and second end of  
16 the support bar to align the thin panel at the predetermined panel angle.

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18          17. The method of Claim 16, wherein the step of providing a support arm assembly  
19 comprises:

20          providing a support bar wherein the longitudinal axis of the first arm of the support bar is  
21 joined to a longitudinal axis of the second arm of the support bar at an elbow angle substantially equal  
22 to the panel angle, the elbow angle disposed at a location nearer the first end of the first arm of the  
23 support bar.

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25          18. The method of Claim 16, wherein the step of providing a support arm assembly  
26 comprises:

27          providing a support bar having an adjustable elbow angle.  
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1           19. The method of Claim 16, wherein the step of providing a support arm assembly  
2 comprises:

3           providing a support bar wherein the second end of the support bar includes an adjustable  
4 length.

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6           20. The method of Claim 16, wherein the first mounting assembly comprises:

7           a first mounting plate;

8           a first cover for concealing the first mounting plate; and

9           an outside cap for securing the first end of the support bar to the thin panel.  
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11          21. The method of Claim 20, wherein the first mounting plate comprises:

12          a circular disk, having a first diameter, first and second sides and a center, and a round hole  
13 formed through the center of the circular disk for receiving the first arm of the support bar, flat on  
14 the first side and formed with a raised, hexagonal nut portion axially aligned with the center of the  
15 circular disk on the second side;

16          wherein a plurality of external screw threads are disposed around a perimeter of the circular  
17 disk and a plurality of internal screw threads matching the pitch and diameters of the external threads  
18 on the first end of the support bar are disposed within the bore through the circular disk  
19

20          22. The method of Claim 20, wherein the first cover comprises:

21          a top-hat-shaped cover having a crown portion and a brim portion and formed about a central  
22 axis;

23          wherein a plurality of internal screw threads, of pitch and diameters to match the threads  
24 around the perimeter of the first mounting plate, are formed inside the crown portion of the first  
25 cover, and a hole for receiving the first arm of the support bar there through is formed in the crown  
26 portion centered on the central axis of the first cover.  
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1           23. The method of Claim 20, wherein the outside cap comprises:  
2           a machine screw having a threaded shank and a disk-shaped head having a diameter  
3 approximately equal to the first diameter of the first mounting plate;  
4           wherein screw threads on the threaded shank match a plurality of internal screw threads within  
5 a hole formed in the first end of the support bar along the longitudinal axis of the first arm of the  
6 support bar.

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8           24. The method of Claim 16, wherein the second mounting assembly comprises:  
9           a second mounting plate;  
10          a plurality of mounting screws for securing the second mounting plate to the fixed mounting  
11 surface; and  
12          a second cover for concealing the second mounting plate.

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14          25. The method of Claim 24, wherein the second mounting plate comprises:  
15          a cylindrical body portion having an internally threaded axial bore there through and a circular  
16 flange portion disposed about and unified with a first end of the body portion;  
17          wherein a plurality of external screw threads are disposed around a perimeter of the circular  
18 flange portion; and  
19          wherein a plurality of mounting holes are uniformly disposed through the flange portion  
20 around and parallel to the axial bore.

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22          26. The method of Claim 24, wherein the second cover comprises:  
23          a top-hat-shaped cover having a crown portion and a brim portion and formed about a central  
24 axis;  
25          wherein a plurality of internal screw threads, of pitch and diameters to match the threads  
26 around the perimeter of the second mounting plate, are formed inside the crown portion of the first  
27 cover, and a hole for receiving the second arm of the support bar there through is formed in the  
28 crown portion centered on the central axis of the second cover.